

THE EARLY STAGES OF BREPHIDIUM PSEUDOFEA (MORRISON) (LEPIDOPTERA, LYCAENIDAE)

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Since very little seems to be known about the early stages of the Eastern Pygmy Blue Butterfly, *Brephidium pseudofea* (Morrison), it is hoped that the following observations will be of interest. Klots (1951, p. 163) recorded having seen the species swarming in Florida in a semi-tidal flat at the edge of mangroves overgrown with saltwort (*Batis*) and glasswort (*Salicornia*). While the butterfly's normal range in the United States is from the Florida Keys north into Georgia, and probably in the Gulf States east of the Mississippi, it rarely wanders far from the coast. These facts gave the necessary clues to the writer for investigations which were carried on near New Smyrna Beach, Florida. As a result, glasswort (*Salicornia bigelovii* Torr.) was definitely found to be a larval foodplant; and there is reason to suspect that saltwort (*Batis maritima* L.) may also be a larval foodplant. Eggs and larvae were found on glasswort, May 20, 1959, and the insect was carried through to maturity on this plant. The larvae were found to chew the outer tissues of the stems and branches of this plant in a rather characteristic fashion. Very similar chewing was found on a few sprigs of saltwort collected at random in the same environment. Both of these halophilic plants grow in close association in salt marshes; and, at least in the New Smyrna area, saltwort is generally more abundant than glasswort, sometimes growing in pure stands acres in extent.

The butterfly is on the wing during the greater part of the year, i.e. from March to late November. However, it is difficult to determine the number of generations per year, if there is a definite number, because of the over-lapping of the generations in the semi-tropical climate. In peninsular Florida, the known range of the species is from New Smyrna (coastal salt marshes) south to Key Largo, Matecumbe Key and "presumably" other coastal islands.

THE OVUM

A considerable amount of time was spent hoping to witness

oviposition on the salt marsh vegetation, with no success. A careful search for eggs and larvae was then made with a hand lens on sprigs of glasswort. Finally, after numerous trials, both eggs and larvae were found. Since there was no definite assurance that this material represented the early stages of *pseudofea*, 4 eggs and 9 very small to medium sized larvae were collected and taken home for further study.

The eggs were very small; one specimen showed a diameter of about 440 μ . The egg is disc-shaped, being round and flat (a characteristic of Lycaenid eggs) and pearly white in color; the relatively small micropyle area is pale green. The upper surface is studded with numerous irregular, rounded depressions. Apparently the egg is laid singly on the basal portion of a branch close to the stem, a position that may be "instinctively" chosen as an aid to concealment. However, this is not an invariable rule, since a few eggs were found in more exposed positions on the branches. Since oviposition was not actually witnessed, the period for the hatching of the egg was not determined. However, 4 or 5 days might be suggested as a reasonable guess.

THE LARVA

After emergence the larva is approximately 1.5 mm. long. In color it is apple green, so closely resembling the color of the food plant as to suggest cryptic coloration. The same shade of green persists to the pre-pupational stage. Even while undisturbed, young larvae are capable of suspending themselves by a silk thread, which serves to prevent them from falling from the plant, or as a "life-line" if they do fall.

After emergence from the egg, the larva eats very little of the eggshell. As larval development proceeds the more or less uniform-appearing, apple green skin takes on a granular appearance. This is due to numerous small, hyaline papillae. These are basally broad, forming a pedicel that tapers toward the distal end, which terminates in a rounded knob. The papillae are moderately curved and slope cephalad at an angle of about 45. The granular appearance of the larval skin is presumably further evidence of cryptic, protective coloration, because it is closely similar to the minute punctations on the stems and branches of the glasswort.

The head of the larva is black or very dark brown; and while

the larva is feeding is kept almost, if not entirely, hidden by the enlarged prothorax which forms a hood over it. Both the anterior extremity of the hood, and the terminal edge of the anal segment, are fringed with rather short, fine hairs that possibly function as

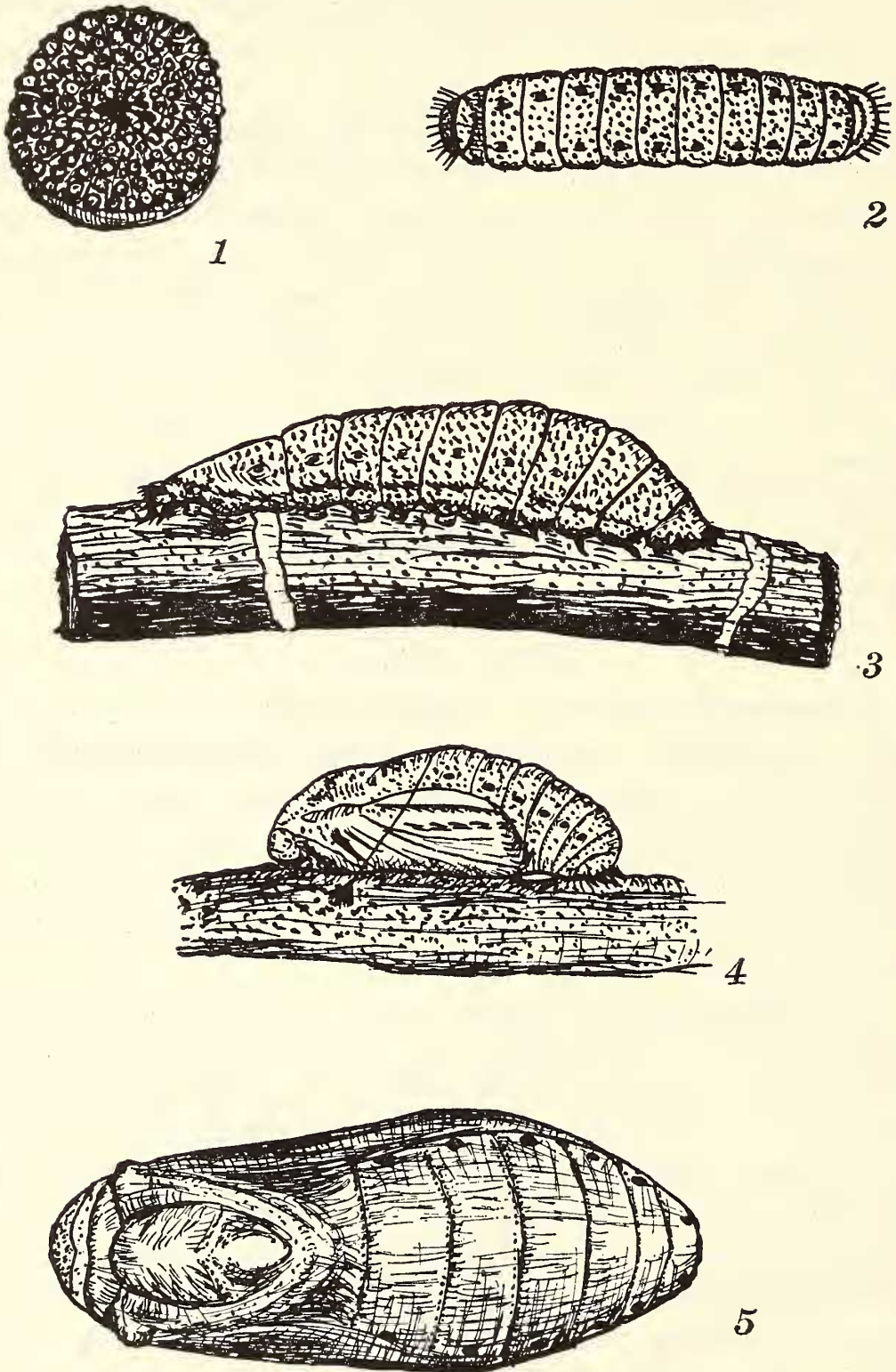


FIG. 1. *Brephidium pseudofea*. 1. Ovum, 440 μ . 2. Larva, dorsal view, 8 mm. 3. Larva, lateral view, 9 mm. 4. Pupa, lateral view, 6.5 mm. 5. Pupa, dorsal view, 6.5 mm \times 10 mm.

tactile structures. Unfortunately, circumstances did not permit a careful study of the details of larval growth, or a record of the number of instars.

As previously mentioned, the larvae have a characteristic method of feeding. During early larval life the tips of the glasswort branches are hollowed out deeply enough to conceal the larva. Later, the outer, succulent tissues of the plant are consumed so as to make rather deep, and relatively wide grooves, the length and width of which depend on the size of the larva.

THE PUPA

Just before pupation the larva becomes less elongated, and the thoracic region thickens, or "hunches up" as is characteristic of most lepidopterous larvae at this time. During pupation the color changes to a slightly lighter, more hyaline shade of green. The pupa resumes the normal green color, which so matches the pigmentation of the glasswort branch as to represent a very fine example of protective coloration. The pupa is attached to a branch by means of several strands of very fine silk which are fastened to the branch on each side of the pupa and pass dorsally over its thorax. The anal end of the pupa is also attached to the branch by numerous, rather loosely woven, strands of silk. The pupal stage of a small number studied lasted 4 to 5 days.

Literature Cited

- KLÖTS, A. B. 1951. A field guide to the butterflies, Houghton, Mifflin, Boston.